

POSTPARTUM HORMONES AND METABOLITES AFFECTING FERTILITY IN HOLSTEIN AND JERSEY COWS

Monica Caldeira

Dr. Matthew C. Lucy, Thesis Supervisor

ABSTRACT

Dairy cows have experienced major changes in productivity during the past 70 years. A selective pressure was applied to increase milk yield, but fertility declined. The objective of the two studies was to investigate the interactions between metabolic and physiological status during the first four weeks postpartum and fertility in Holstein and Jersey dairy cows.

In the first experiment, blood from 107 Holstein dairy cows was collected during the first four weeks of lactation. Progesterone, IGF-1, NEFA, BHB and glucose were measured to examine the effects of pregnancy status (pregnant to first insemination or pregnant after three inseminations) and parity. There was an effect of parity on IGF-1, NEFA, BHB and glucose concentrations.

In the second experiment, blood from 127 Jersey was collected at first, second, third and fourth week postpartum. The same hormones and metabolites were measured. The IGF-1, BHB and glucose concentrations were affected by parity. There was an effect of pregnancy status on NEFA concentrations.

In conclusion, we found limited data to sustain our hypothesis that metabolic and hormonal changes during the first four week of lactation have negative carryover effects on reproductive performance of Holstein and Jersey dairy cows later in lactation.